

FIG. 1

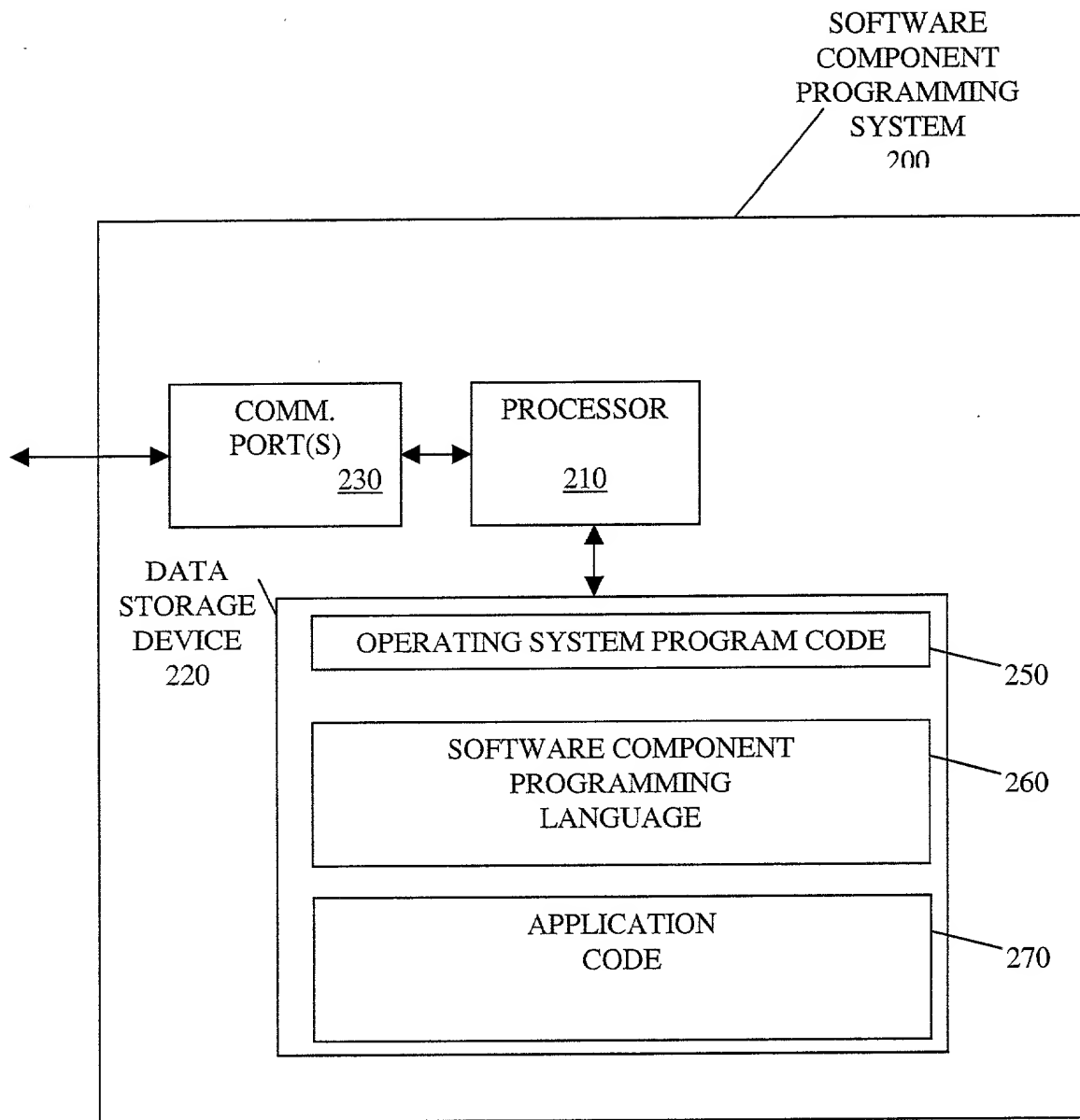


FIG. 2

ComponentOnce(P)	component $\check{c} \dots$ component $\check{c}' \dots$ is in $P \Rightarrow \check{c} \neq \check{c}'$
PortOnce(P, \check{c})	component $\check{c} \{ \dots p \dots p' \dots \}$ is in $P \Rightarrow p \neq p'$
InterfaceOnce(P)	interface $i \dots$ interface $i' \dots$ is in $P \Rightarrow i \neq i'$
ClassOnce(P, \check{c})	component $\check{c} \{ \dots \text{class } c \dots \text{class } c' \dots \}$ is in $P \Rightarrow c \neq c'$
MethodOnce(P, \check{c})	component $\check{c} \{ \dots m \dots m' \dots \}$ is in $P \Rightarrow m \neq m'$
MethodOnce(P, c)	class $\check{c} \{ \dots m \dots m' \dots \}$ is in $P \Rightarrow m \neq m'$
FieldOnce(P, \check{c})	component $\check{c} \{ \dots f \dots f' \dots \}$ is in $P \Rightarrow f \neq f'$
FieldOnce(P, c)	class $\check{c} \{ \dots f \dots f' \dots \}$ is in $P \Rightarrow f \neq f'$
InterfaceAbstract(P)	interface $\{ \dots m(\dots) \{ E \} \dots \}$ is in $P \Rightarrow m$ is abstract
$\prec_{P, i, i'}$	$i \prec_{P, i, i'} i' \Leftrightarrow$ interface i extends i' is in P
$\prec_{P, c, c'}$	$i \prec_{P, c, c'} c' \Leftrightarrow$ component $\check{c} \{ \dots \text{class } c \text{ extends } c' \dots \}$ is in P
$\prec_{P, \check{c}, i}$	$c \prec_{P, \check{c}, i} i \Leftrightarrow$ component $\check{c} \{ \dots \text{class } c \text{ implements } i \dots \}$ is in P
$\prec_{P, \check{c}, c}$	
\prec	\prec : is a reflexive, transitive closure of $\prec_{P, i, i'} \cup \prec_{P, c, i}$
WellFounded(P)	\prec : is antisymmetric
ClassMethodOK(P, c)	\prec : Inheritance is consistent, method overriding preserves type, and classes implement all interface methods that its inherits.
InterfaceMethodOK(P)	\prec : Inheritance or redeclaration of method are consistent, and methods cannot return or accept interface and class types (only component, port, and primitive types are allowed in methods declared in an interface)
NoAbstractMethod(P, \check{c})	\prec : Component have no abstract methods
NoAbstractMethod(P, c)	\prec : Class have no abstract methods
PortsOK(P)	\prec : Inheritance or redeclaration of ports are consistent
$\in_{P, m}^{i, m}$	Method m is declared in i $\langle s \ m(var_1 : s_1 \dots var_n : s_n), E \rangle \Leftrightarrow$ interface $i \dots \{ s \ m(s_1 \ var_1, \dots, s_n \ var_n) \{ E \}$ is in P
$\in_{P, c}^{c, c}$	Class c is contained in a component \check{c}
$\in_{P, m}^{c, m}$	Method m is contained in a component \check{c}
$\in_{P, p}^{c, p}$	Port p is contained in a component \check{c}
$\in_{P, f}^{c, f}$	Field f is contained in a component \check{c}
$\in_{P, \check{c}}^{c, m}$	Method m is contained (or inherited) in a class c that is defined in a component \check{c}
$\in_{P, \check{c}}^{c, f}$	Field f is contained (or inherited) in a class c that is defined in a component \check{c}
\in	$\in_{P, m}^{i, m} \cup \in_{P, c}^{c, c} \cup \in_{P, p}^{c, p} \cup \in_{P, f}^{c, f} \cup \in_{P, \check{c}}^{c, m} \cup \in_{P, \check{c}}^{c, f}$
WellFormed(P)	P is well-formed if all of the above predicates and relations are satisfied.

FIG. 4